

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. After amending the claims as set forth above, claims 17-31 are now pending in this application.

Applicants wish to thank the Examiner for the careful consideration given to the claims.

Rejection of claims 17-28 and 30-31 based on Nonobe

Claims 17-28 and 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,158,537 ("Nonobe"). For at least the following reasons, this rejection is traversed.

Claim 17 recites, among other things, a fuel cell system comprising an energy supply, a load set, and a controller. The energy supply comprises a fuel cell, a power distributor connected to the fuel cell, and a secondary cell connected to the power distributor. The load set is connected to the power distributor. The controller is configured to, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, control the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. The first power distribution unit has a first power generated at the fuel cell and distributed to the secondary cell and the load set. The second power distribution unit has a combination of a second power generated at the fuel cell and a third power discharged from the secondary cell, distributed to the load set. The amendments in this Reply are supported by S3, S4, S17, and S18 of Fig. 3A of the present application. Nonobe does not teach or suggest the combination of features of claim 17.

For instance, Nonobe does not teach or suggest a controller configured to, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, control the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. According to a power supply system of Nonobe, the control unit 50 is connected to a relay 42 and an on/off switch 38, and controls the relay 42 and the on/off switch 38. Nonobe discloses that the control unit 50 is constructed

as a logic circuit including a microcomputer, and has a CPU 52, a ROM 54, a RAM 56, and an input/output port 58; the switching state of the on/off switch 38 is controlled by the control unit 50; the relay 42 is connected to the control unit 50; and the control unit 50 causes the relay 42 to brake the connection in the circuit (Column 10, lines 14-16; column 9:32-33; column 9, lines 51-60.) Also, Nonobe discloses that, when the power supply system 10 is started, the control unit 50 gradually increases the flows of gases supplied to the fuel cells 20. After the warm-up of the fuel cells 20 has been completed to enable the fuel cells 20 to output the electric current at or above a predetermined level, the fuel cells and the storage battery take charge of the outputs at a predetermined ratio according to the magnitude of the loading and the charge state of the storage battery, while the fuel cells charge the storage battery. (Column 12, line 64 to column 13, line 21 of Nonobe.)

However, Nonobe does not disclose or suggest when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, a controller is configured to control the power distributor to warm the energy supply by alternatively repeated switching a first power distribution unit and a second power distribution unit. Nonobe does not even disclose a controller configured to, when the fuel cell system is started up, control the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit, or a controller configured to, based on if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, to control the power distributor to warm the energy supply by alternatively repeated switching a first power distribution unit and a second power distribution unit. Indeed, the behaviors of the fuel cell and the secondary cell of claim 17 are completely different from behaviors of the fuel cells and the storage battery of Nonobe. Because Nonobe does not teach or suggest a controller capable of carrying out the functions of the controller of claim 17, claim 17 is allowable over Nonobe.

The PTO asserts that:

As to configuring the controller to control the power distributor to warm the energy supply when the fuel cell system is started up, Nonobe discloses that a controller, control unit 50, is constructed as a logic circuit including a microprocessor and a CPU, a ROM, a RAM, and an input/output port (10:14-16). Thus, one of ordinary skill would appreciate that controller of Nonobe is

capable of being configured to control the power distributor in order to warm the energy supply as recited by the functional language of this portion of claim 1 because the controller of Nonobe is in communication with the fuel cell system's power distributor and energy system (9:32-36, 9:51-52, 9:59-60)...

As to the functional language recited in claim 1 describing how the controller is to warm the energy supply (see p. 29, lines 10-16 of Applicant's disclosure), one would appreciate that the controller of Nonobe is capable of being configured to alternatively repeat the steps recited by the functional language of this portion of claim 1 because the controller of Nonobe is configured to control the power distributor (9:51-52, 9:59-60). (Page 3 of the Office Action.)

It respectfully submitted that Nonobe does not teach the controller of claim 17. The controller of claim 17 is configured to perform particular functions.¹ The PTO asserts that the controller of Nonobe "is capable of being configured" to perform these functions. (Page 3 of the Office Action.) However, if Nonobe does not teach the functions performed by the controller of claim 17, it is not possible for one of ordinary skill in the art to appreciate that the controller of Nonobe "is capable of carrying out these functions." Indeed, the functions of the controller in claim 17 are not disclosed in Nonobe, and one of ordinary skill in the art would not understand that the controller of Nonobe to "be capable" of carrying out functions that are not described in the Nonobe. The fact that the controller of Nonobe is programmable does not, by itself, anticipate the controller of claim 17 if the function of which it allegedly performs is not disclosed by Nonobe. Indeed, the merely allegation that the controller of Nonobe "is capable of being configured" to perform the claimed functions of the controller of claim 17 requires the disclosure of the present application. Such a rejection relies upon hindsight, and is improper. (See MPEP 2142.²) Because the controller of Nonobe is not configured to, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, control the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit, claim 17 is allowable of Nonobe.

¹ The controller of claim 17 is configured to "when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, control the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit"

² "[I]mpermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art."

Claims 17-28 and 30 depend from and contain all the features of claim 17, and are allowable for the same reasons as claim 17, without regard to the further patentable features contained therein.

Claim 31 recites, among other things, a control method of a fuel cell system comprising an energy supply comprising a fuel cell, a power distributor connected to the fuel cell, and a secondary cell connected to the power distributor, and a load set connected to the power distributor. The control method comprises, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, controlling the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. The first power distribution unit has a first power generated at the fuel cell and distributed to the secondary cell and the load set. The second power distribution unit has a combination of a second power generated at the fuel cell and a third power discharged from the secondary cell, distributed to the load set. Nonobe does not teach or suggest this combination of features.

For instance, Nonobe does not teach or suggest the step of, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, controlling the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. Nonobe merely teaches the supplying of energy to a storage battery when the fuel cell system is stopped. The passages cited by the PTO for providing a teaching of the step of, when the fuel cell system is started up, controlling the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit, do not support such a teaching. Indeed, the passage of Nonobe cited by the PTO for allegedly providing a teaching of the step at start-up (column 12, line 64 to column 13, line 14) does not teach the controlling of the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. The passage of Nonobe cited by the PTO for allegedly providing a teaching of the alternately repeated switching (column 10, line 66 to column 11, line 13 and column 11, lines 52-60) does not relate to start-up. Thus,

Nonobe does not teach or suggest the step of, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, controlling the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit, and claim 31 is allowable over Nonobe.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claim 29 based on Nonobe on Mufford

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nonobe in view of U.S. Patent 6,186,254 ("Mufford"). Claim 29 depends from and contains all the features of claim 17. Nonobe does not teach or suggest all the features of claim 17, including a controller configured to, when the fuel cell system is started up and if a warm-up mode is required based on a possible generation of the fuel cell and a possible discharge from the secondary cell, control the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. Mufford does not cure the deficiencies of Nonobe because Mufford merely discloses a temperature regulating system for maintaining the temperature of a fuel cell. Thus, no combination of Nonobe and Mufford teaches or suggests all the features of claim 17 and its dependent claim 29, and these claims are allowable over the prior art.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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